Case Study: Swietelsky – Fully Electric Liebherr Excavator for Zero-Emission Rail Work

Maximum capacity, perfect integration, uncompromising reliability – without sacrificing visibility, safety, or operator comfort.

Challenge

Swietelsky, one of Europe's largest rail contractors, needed a retrofit solution to enable truly zero-emission operations – without compromising performance, visibility, or the familiar operator experience.
Standard retrofit battery packs were often too bulky, obstructed the operator's view, and lacked sufficient capacity for long work shifts.

Solution: PowerBattery Drop-In Pack

Together with our retrofit partner Nijhuis Engineering, we developed a custom, fully integrated battery pack for Swietelsky's Liebherr excavator.
Our solution delivers:

- **A total battery capacity of 489 kWh** (compared to 250–350 kWh for standard retrofits)
- **Four smartly integrated battery packs, fully concealed within the existing chassis** – preserving the original design, visibility, and operator ergonomics
- **Rail-grade safety and reliability:** all components included, such as BMS, cooling, and integrated safety features
- **Up to 20 hours of operation per charge, whisper-quiet and zero-emission**
- **Full certification (RDW, CE, TCVT) and rail-specific safety systems including the BE-AR pendulum axle system and AI-driven cameras**

Result

- **Swietelsky's first fully electric rail excavator is now operating daily, emission-free and nearly silent, on the tracks**
- **After initial testing and approval, ready for scaling up towards 24 to 36 excavators per year**
- **The original look and feel of the Liebherr is fully preserved** – no compromises on visibility, safety, or ergonomics
- **Significantly higher energy content than traditional retrofits**
- **Immediately deployable for the most demanding rail projects, future-proof for zero-emission construction**

Case Study: Swietelsky – Fully Electric Liebherr Excavator for Zero-Emission Rail Work

Visual 1

Our solution: four battery packs seamlessly integrated into the chassis, maintaining the original lines and optimal operator visibility.

Case Study: Swietelsky – Fully Electric Liebherr Excavator for Zero-Emission Rail Work

Visual 2

Example of a traditional retrofit – large battery blocks disrupt the design, limit visibility, and offer less capacity.

Why PowerBattery?

Standard retrofit packs are often a compromise. PowerBattery delivers complete, fully integrated drop-in solutions – designed for maximum performance, safety, and ease of use, even in the most demanding applications.

Looking for maximum capacity, optimal integration, and proven reliability? Contact us at info@powerbattery.nl. Not able to handle a retrofit yourself? We are happy to connect you with our partner Nijhuis Engineering.